ABSTRACT

Introduction: Carbapenem resistance in Klebsiella pneumoniae is due to Carbapenem hydrolysing enzymes(Carbapenemases). Accurate detection of carbapenemase must be done for patient treatment and for epidemiological purposes.

Aim: To detect carbapenemase production in Klebsiella pneumoniae, by Modified Hodge Test (MHT), Combined Disk Test (CDT) Rapidec Carba NP (RCNP) Test and Genotyping by PCR for the detection of bla_{KPC}, bla_{NDM} , bla_{OXA48}, bla_{IMP} and bla_{VIM} gene.

Material and Methods: Using a prospective laboratory study design, 196 isolates of Klebsiella pneumoniae from clinical samples of patients admitted in the Government Rajaji Hospital, Madurai were collected from September 2016 to August 2017. Isolates resistant to carbapenems by disk diffusion were confirmed by E-test and they were subjected to MHT, CDT with Imipenem and Imipenem-EDTA for MBL (Metallo betalactamases), RCNP test and subjected to PCR for the detection of bla_{KPC} , bla_{NDM} , bla_{OXA48}, bla_{IMP} and bla_{VIM} genes .

Results: Out of 196 isolates of Klebsiella pneumoniae, 26 were resistant to carbapenem,of which 16(61.54%) were positive for MHT, 21(80.77%) were positive for Rapidec CarbaNP test. Number of MBL producers by CDT was 22(84.6%). By PCR bla_{NDM} gene was detected in all 26 isolates, no other genes have been detected.

Conclusion: Though detection of drug resistance gene remains the method of choice, it can be performed only in centers with adequate resources. Hence, for

most laboratories in resource poor countries, the MHT, supplemented with CDT seem to be a better option for detection of Carbapenemase production.

Keywords: Klebsiella pneumoniae, Carbapenems, Carbapenemase, Metallo-β-lactamase, Modified hodge test.